SC2 Status Report

Project Overview Board
June 24, 2003

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SC2 Chair

SC2 focus since February 2003 (1)

- Monitor LCG progress
  - Receive regular LCG status report
    - AA (April), Seal Project status (April), FA (March), GTA (May), GDA (March), Mathematical Libraries (January + April)
  - Review LCG Q1 Status report and milestones performance

- Approve work-plans:
  - Physics interfaces: with modifications
  - Simulation

- Discuss, initiate and approve new scope
  - Grid Applications Group (GAG) prepares HEPCAL II report
  - RTAG on Distributed Analysis (ARDA)
  - Conditions Database tools

SC2 focus since February 2003 (2)

- Tentative schedule for TDRs:
  - LCG TDR scheduled for mid 2005 (unchanged)
  - Plans for the experiments:
    - Provide mature computing models by end of 2004, input to LCG TDR
    - Deadline for computing TDRs end of 2004 may move closer to LCG TDR,
      - reducing congestion with 2004 Data Challenges
      - because of dependencies on the LCG TDR
  - LHCC informed
  - Plans will be re-discussed this fall

SC2 focus since February 2003 (3)

- The SC2 had a long discussion about EGEE, the impact and the relationship between EGEE and LCG. The main concerns were:
  - The management of the middleware work package
  - The integration and validation of the middleware
  - The EGEE operations and service provision
  - The support personnel for HEP applications

As a consequence the SC2 wrote a memo to the LCG Project leader with copies to CERN, IT and EGEE management

LCG scope:

- **Proposal to work on the Conditions Database approved:**
  - The database is used to a varying degree online and offline by ATLAS, CMS and LHCb.
  - The proposed work includes
    - the review of the interface,
    - tools to manage, browse, replicate, and manipulate (also interactively) the data and
    - the SCADA system interface used by slow control.
  - The priority of POOL is clearly higher than this proposed work.
  - The SC2 approved the proposal and looks forward to receive a work plan from AA.

- A proposal to stimulate a discussion on **prompt reconstruction** was presented. The SC2 encouraged starting a workshop or similar activity on this item.

LCG work plans: PI

Physics Interfaces: (from blueprint RTAG)

- approved with the following priorities:
  - start immediately on the following work packages:
    - WP1: 1.1, 1.2, and 1.3: AIDA: ROOT implementation of AIDA, Aida interface to SEAL
    - WP2: 2.2: Core visualization services
    - WP2: 2.1, 2.3, and 2.4: basic interactive services, bridge to and from ROOT (in SEAL or PI)

- To be discussed again:
  - WP1.4 and WP4: a complete Analysis tool and Event and Detector Visualization
  - WP3 (Grid Interfaces) needs input from a RTAG

LCG work plans: Simulation

Simulation Work-plan: from Simulation RTAG

- Work consists of 6 subprojects; the acting project leader is Torre Wenaus
  - **Simulation Framework (Andrea Dell'Acqua)**
  - **Geant4 (John Apostolakis)**
  - **Fluka Integration (Alfredo Ferrari)**
  - **Physics Validation (Fabiola Gianotti)**
  - **Shower Parameterization (N.N.)** This subproject is a placeholder for future activity.
  - **Generator Services (awaiting MC4LHC input)**
- The well prepared work-plan was approved on March 14.

LCG work: Mathematical Libraries

- The **Mathematical Library Project** will be organized under the SEAL project (Core Libraries and Services).
- Status of work performed:
  - The collaboration with the Indian colleagues started in November 02 and the deadline of April 15th was met:
  - they reviewed the mathematical routines used by the experiments and repackaged the corresponding GSL code (after having checked the quality and providing the missing code)
  - A few routines were added/modified

- The conclusion is that GSL can replace all used NAG routines and GSL should be used.

Grid Application Group (GAG)

- Members:
  - Chair: F.Carminati
  - CMS: C.Grandi + R.Cavanaugh
  - LHCb: E.Van Herwijnen + N.Brook
  - GTA: D.Foster
  - Relations to EU Projects: F.Harris
  - ATLAS: L.Perini + D.Quarrie
  - ALICE: P.Cerello + P.Buncic
  - GDA: F.Donno + A.Sciaba
  - App Area: J.Beringer + O.Smirnova
  - Exp't Independent expert: J.Templon

- Draft report discussed in SC2 (May)
  - different scenarios with respect to data set access and queries to be performed
  - Key point: this part of the software might be fairly experiment independent.
- "provenance" is the major open issue:
  - requirement to express the result of a (large) production/analysis in terms of events data sets used, calibration, analysis program, underlining middleware and operating systems,
  - to guarantee the possibility to redo the full chain.

- The HEPCAL II report is on track for end of June.

RTAG started on: An Architectural Roadmap towards Distributed Analysis (ARDA).

Observation:

- Different LHC experiments have developed packages (AliEn, Ganga, Dirac, Impala, Boss, Grappa, Magda…) that either sit on top, complement, expand or parallel the functionality of the Grid middleware (VDT, EDG…)
- At this time the LCG is coming to grips with the middleware development requirements
- There is an expectation that an OGSA Services Architecture will be the basis for future development.
- The Experiments need to specify in their TDR's, baselines, fallback and development strategies

Motivation:

- To agree on requirements as laid out in a first step by recent work within the GAG and identify commonalities within the current projects which might allow the LCG (both in the AA and GTA areas) to provide a focus of effort.
- To provide guidance to the LCG on future Middleware development directions and interfacing work to match the experiment requirements
- To build on the richness of the current technical solutions to avoid duplication of efforts
- To clearly identify the roles and responsibilities of the components/layers/ services in the experiment DA planning
- To give guidance to the community on the expected division of work between the experiments, the LCG and the external projects.

Mandate for the ARDA RTAG

- To review the current DA activities and to capture their architectures in a consistent way
- To confront these existing projects to the HEPCAL II use cases and the user's potential work environments in order to explore potential shortcomings.
- To consider the interfaces between Grid, LCG and experiment-specific services
  - Review the functionality of experiment-specific packages, state of advancement and role in the experiment.
  - Identify similar functionalities in the different packages
  - Identify functionalities and components that could be integrated in the generic GRID middleware
- To confront the current projects with critical GRID areas
- To develop a roadmap specifying wherever possible the architecture, the components and potential sources of deliverables to guide the medium term (2 year) work of the LCG and the DA planning in the experiments.

Schedule and Makeup of ARDA RTAG

The RTAG shall provide a draft report to the SC2 by September 03.

- It should contain initial guidance to the LCG and the experiments to inform the September LHCC manpower review, in particular on the expected responsibilities of
  - The experiment projects
  - The LCG (Development and interfacing work rather than coordination work)
  - The external projects

The final RTAG report is expected for October 03.

The RTAG shall be composed of

- Two members from each experiment
- Representatives of the LCG GTA and AA
- If not included above, the RTAG shall co-opt or invite representatives from the major Distributed Analysis projects and non-LHC running experiments with DA experience.

Q1: LCG Milestones Performance-1

General Remarks: recommended changes for future reports

- Adapt the concept of base-lining schedule and milestones:
  - a snapshot of the complete set of milestones is extracted and approved.
  - Any updates and changes to the base-lined project set of milestones should be submitted for approval together with quarterly status reports.
- The SC2 will generally only look at Level-1 and Level-2 milestones, whereas the LHCC reviews the project with respect to the Level-1 milestones.
  - Level 3 milestones should be available to better track the progress.
- Suggested: add milestones on verification and use of products or services in experiments wherever adequate.
  - Proposed by LCG project, to be discussed in the SC2.
  - These milestones will be on the experiments, need to be agreed by all parties in the SC2.
- The consequences of missed or delayed milestones should be analyzed and reported consistently in all project areas in future status reports, together with a possible risk analysis.
- The staffing situation seems to be adequate and good, except in the areas of Grid Deployment and grid support for experiments. In addition the experiments report a manpower problem for experiment core software.
  - The SC2 suggests to have a consistent way across all areas for reporting LCG manpower, broken out by subprojects and origin (funding source, location) of manpower.
  - This should be accessible from a central, official LCG place.

Q1: LCG Milestones Performance-2

Applications Area

- **Software Process and Infrastructure (SPI)**
  - The project is well advanced and supporting the development of LCG software,
- **Persistency Framework - POOL**
  - This project seems on schedule and progressing well.
  - The milestones due in the period were met.
  - Short-term forthcoming milestones (important ones) are correctly reported.
- **Core Libraries and Services – SEAL**
  - The project seems on schedule in order to meet the next quarter major milestone: SEAL V1.0.
  - Next quarter milestones are quoted correctly, except for the one called "Grid enabled services defined (May 03)", needs input from RTAG11
  - The project plan should be updated to include the Math-library work-plan.
- **Physics Interfaces - PI**
  - This sub-project was re-scoped by the SC2 and currently adheres to the schedule approved by the SC2. The current milestones have been met correctly.
- **Simulation**
  - The work-plan has been presented to the SC2 in March.
  - All the milestones have been met and the project is starting well, it has its first major milestones coming up in June 2003.

Q1: LCG Milestones Performance-3

Grid Technology Area (GTA)

- The activities in the GTA are mostly coordination oriented.
- Concerning the milestones due in Q1/2003:
  - The technology selection for LCG-1 has been met.
    - The Level-3 milestone on the VDT initial software package has also been met.
    - The Plan for the OGSA evaluation is a Level-3 milestone and has been delayed for the reasons given in the status report.
  - The milestones for the next reporting period should be listed, the impact of delayed or missed milestones should be explained.

- The manpower is behind schedule, but the situation will be improved by adding 2 people during the next reporting period (improved in April/May).

Q1: LCG Milestones Performance-4

Grid Deployment Area (GDA)

- The Level-1 milestone to define the LCG-1 service (February 1, 2003) was met in the February and March GDB meetings.
  - A list of tasks still needs further investigations and work.
  - The distribution of LCG-0 software at regional centres is successfully going on, even ahead of schedule.
  - This process requires feedback and a close communication forum between people involved
- The milestone to define the certification and validation process (15 Jan 03) has been met.
  - Manpower shortage for this, but the situation is expected to improve in the future;
- The following milestones were met:
  - Define packaging mechanism (19 Mar 03),
  - Initial pilot service available (1 Feb 03),
  - Delivery of LCG-0 middleware (1 Feb 03).
- The milestone on "Delivery of LCG-1 middleware" (31 Mar 03) could not be met.
  - The reason is late delivery of EDG software.
  - The consequences are severe for the LCG-1 service: initially it will not have the planned functionality, so the milestone on LCG-1 will likely not be met.
- Milestones were to identify operation and call centres (1 Feb 03) are late.
  - By now, agreements could be reached with RAL for an operation centre and with Karlsruhe for the call centre service.

Q1: LCG Milestones Performance-5

Fabric Area

- The activities of the area were well focused
  - Since the CERN T0 and T1 centre solutions should be made available to outside centres more effort should be devoted here and reported.

- The organization was changed during the reporting period to map better onto the LCG project.
  - The report does not assess whether the available manpower is adequate, the milestone performance does not indicate a problem in this area.

- Level-2 milestone during the reporting time has been met successfully:
  - start of the Production pilot (6. Jan 03).

- Level-3 milestones were:
  - Deployment of large monitoring prototype (6 Jan 03) was met with a 6 weeks delay.
  - Basic infrastructure for the Prototype in production (10 Mar 03): met successfully
  - CPU and disk capacity upgrade of Lxbatch (24 Feb 03): this is late due to long purchasing process of new hardware.
  - Node capacity upgrade of the Prototype (24 Feb 03).: not met since it depends on the same hardware delivery dates as for the previous milestone.
  - Lxbatch job scheduler pilot (3 Feb 03): delayed until May due to LCG and Grid software being late or complicated to deploy on the current production system.

LCG Milestones Performance

Topics for next SC2 (June 25):

- A set of **baseline milestones** to be used in the Q2 report.
  - request for changes to this baseline will be discussed and approved by the SC2 together with the quarterly reports
- The plan for **verification milestones** to be established in the experiments;
  - the final approval from SC2 should be ready by August.
- The Q2 report from PEB is expected by middle of July, the performance analysis will be delivered to the mPOB at its August meeting (28.8.03).

SC2 - Outlook

- SC2 is stakeholder of mid-term review process:
  - Perform an in-depth technical assessment and receive advice
    - LCG Project contents
    - Assessment of technical choices
    - Problems and challenges
    - Risk awareness and mitigation planning in LCG and the experiments
    - Recommendations on project contents evolution

- Ongoing discussion on GDB and Regional Center related work:
  - Is there a need for recommendations and agreements which require an RTAG?